

CHAPTER 1

Existing and Future Conditions

I.1 STUDY BACKGROUND

The Connecticut Department of Transportation (ConnDOT), the Capitol Region Council of Governments (CRCOG) and the Central Connecticut Regional Planning Agency (CCRPA) have identified peak hour traffic congestion and safety deficiencies as major concerns for the Interstate 84 (I-84) corridor between Downtown Hartford and the Fienemann Road interchange in Farmington. This corridor forms a critical link between major activity centers, such as Downtown Hartford, the Westfarms Mall in West Hartford, the University of Connecticut Health Center in Farmington, Downtown New Britain, and the growing Farmington River Valley.

To address these concerns and to evaluate the effectiveness of different transportation system improvement alternatives, these agencies jointly undertook a Major Investment Study (MIS) for the Hartford West corridor. The Hartford West study corridor has been broadly defined to include not only I-84 itself, but the neighborhoods surrounding the highway right-of-way, the parallel arterial roadways, and two rail lines, the Bristol-Hartford line and the New Haven-Hartford line.

The majority of the study area is located within the Capitol Region, a metropolitan area composed of Hartford and the 28 towns surrounding it. The Capitol Region's communities have a combined population of 709,404. A portion of the study area (New Britain) is located in the Central Connecticut Region. The study area encompasses portions of five communities: Hartford, West Hartford, Farmington, Newington and New Britain.

This study meets the requirements of an MIS process specified by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). It conforms to FHWA Regulation 23, CFR 771, and complies with all applicable Federal and State policies, protocols and procedures, including those outlined in FHWA Technical Advisory T6640.8A.

I.2 STUDY AREA DEFINITION

The study corridor limits are illustrated in [Figure I.1](#). These limits can be generally described as:

- **South to North on I-84** — from the Fienemann

Road interchange in Farmington to the High Street ramps in Downtown Hartford, including those areas located south of Farmington Avenue in Hartford and West Hartford and north of Route 175 (Cedar Street) in Newington.

- **East to West** — from the High Street ramps in Downtown Hartford to a line extending one mile west of Farmington Avenue in the Town of Farmington, including only those areas north and west of New Britain Avenue in Hartford.

I.3 STUDY AREA CHARACTERISTICS

The study area communities can be divided into three general patterns of population, land use and housing character. These are:

- Urban Areas;
- Inner Suburban Areas; and
- Outer Suburban Areas.

Urban Areas - Hartford and New Britain

The two urban areas - the Cities of Hartford and New Britain - have experienced substantial population loss during the period between 1970 and 1980, and a slight gain in population after 1980. They possess a substantial portion of their respective regions' multi-family housing stock, and a far greater proportion of residents living below the poverty line. The combination of dense housing conditions and low-income households leads to a substantially greater number of households being without a vehicle available to them. In the City of Hartford, nearly forty percent of households have no vehicle available, and can therefore be considered as "transit-dependent" for their mobility needs. In New Britain, the proportion of "transit-dependent" households is approximately sixteen percent.

In Hartford, structures containing five or more units comprise almost half of the residential buildings in the City. Hartford's housing stock is largely renter-occupied housing (75 percent of all units), with a significant portion (16 percent of the City's total housing stock) consisting of Hartford Housing Authority low-income and senior citizen units. The Charter Oak Terrace and Rice Heights housing projects, located within the study area, are sched-

uled for selective demolition and reconfiguration as mixed use complexes during the next three years as part of a U.S. Department of Housing and Urban Development (HUD)-funded initiative. Industrial development opportunities for these properties are currently being pursued.

Three to four unit houses (many of these being “three deckers”) are the next most common type of housing within Hartford, accounting for 22 percent of the housing stock. Two-, three- and four-family houses are the most common housing type within the City of New Britain, constituting 45 percent of that city’s housing inventory.

The urban portions of the study area also exhibit a substantially greater population density and share of minority (i.e. African-American, Hispanic, or Asian) population than either the inner suburban or outer suburban areas. Sixty-nine percent of Hartford’s population are members of minority groups, with African-Americans constituting the single largest segment. The study area contains a substantial concentration of Hispanic residents in the Parkville, Frog Hollow and Charter Oak neighborhoods. Park Street contains a region-serving Latino-oriented shopping district. The City of Hartford contains 65 percent of the Capitol Region’s minority population. New Britain’s population is 24 percent minority. Hispanics represent two-thirds of the minority population citywide. The study area on New Britain’s West Side is largely non-minority, with Ukrainian- and Polish-Americans, including a sizable percentage of non-English proficient immigrants representing a major portion of study area residents within New Britain.

Inner Suburban Areas - West Hartford and Newington

The inner suburban areas within the study area include portions of the Towns of West Hartford and Newington. Both communities are largely developed, especially within the defined study area. Single-family residences and auto-oriented shopping centers constitute the two most common land uses within these towns. Retail facilities are located along Farmington Avenue, Park Road, Prospect Street, and New Britain Avenue in West Hartford and along Route 175, Main Street and the Berlin Turnpike in Newington. The Westfarms Mall in West Hartford is the single largest shopping center within the study area. It serves a regional customer base from the entire study area, as well as all portions of the study area towns.

Much of the residential and commercial development within these communities, especially in West Hartford,

dates from the period between 1930 and 1960, when these inner suburban communities experienced their greatest growth. In comparison to many outer suburban communities, the housing within inner suburban communities tends to be older, and to be sited on smaller lots (less than one-half acre). The inner suburbs as a group also contain a greater share of multi-family or attached units. In this last category, Farmington is the exception to the regional pattern, due in part to the presence of the University of Connecticut Health Center. Thirty-nine percent of Farmington’s housing stock in multi-family or attached units, while in West Hartford the percentage is 32 percent and for Newington it is 21 percent.

Both Newington and West Hartford offer more affordable single family housing prices than the outlying suburban areas to the west. The 1994 median single-family home price in Newington was \$134,100 and in West Hartford, \$159,500. Both of these figures are closer to the regional median sales price of \$143,000 for single-family homes (CRCOG, 1994) than the Town of Farmington, where the median was \$203,000.

The study area population of these two towns has been relatively stable over the last two decades, as the first post-war generation of suburban families has remained in place. The southern portion of Newington which experienced additional residential development during the 1970-1990 period is located outside the Hartford West MIS study area. Both West Hartford and Newington, therefore, have a population that includes a higher than average proportion of senior citizens. For the Capitol Region as a whole, the percentage of population over 64 years old is 13 percent. In West Hartford, 23 percent of the population is over 65, while in Newington, 17 percent of the population is over 65. While it is considered an Outer Suburban community based on other characteristics, Farmington also has a larger than average share of senior citizens, with 15 percent of its 1990 population over 65. These proportions may change over time as younger families are now moving into both of these towns.

Outer Suburban Area - Farmington

The Town of Farmington had the third highest rate of growth (26 percent) within the Capitol Region between 1980 and 1990. Only the towns of Hebron and South Windsor grew at a faster rate during this decade. During the peak years of Farmington’s development boom, 1985-1988, over 1,500 building permits were issued, representing a 38 percent growth in Farmington’s housing supply.

Key factors in this growth have been: the availability of land zoned for multi-family (condominium) housing and office development; the growth of the University of Connecticut Medical Center; and the continuing development of large-lot (1-2 acre) subdivisions in the western portion of the town (outside the study area).

Study Area Land Use and Neighborhood Characteristics. Neighborhood characteristics, such as predominant household type and size, land use, per capita and median family income, availability of vehicles, and predominant housing density are all important determinants of travel demand. These characteristics are reviewed in the following section.

Hartford. For the City of Hartford, the key transportation concern for the Hartford West study area is that future improvement plans be made to support other urban re-development initiatives. The Hartford portion of the I-84 West MIS study area incorporates a broad mix of uses. It encompasses all or portions of the following designated planning areas: Downtown, Asylum Hill, West End, South Green, Frog Hollow, Parkville, Barry Square, Charter Oak - Zion (also known as Behind the Rocks), and a small portion of the Southwest neighborhood. These areas have distinct economic, land use and housing characteristics which are noted in the 1995 *Plan of Development for the City of Hartford*. For detailed descriptions of these areas, please see Technical Report #1.

New Britain. There are no formal neighborhood associations within the City of New Britain. The four planning areas defined by the 1984 *New Britain Master Plan* lie outside the study area. Based on the housing and economic data contained in the 1994 *Plan of Development, Housing Analysis*, it can be concluded that the characteristics for the City of New Britain differ significantly from the north and northwest portions of the city that lie within the defined Hartford West MIS study area. The distinctive land use and socio-economic characteristics of these areas are described in Technical Report #1.

Newington. Newington can be identified as a suburb of both Hartford and New Britain, with three-quarters of its workforce employed outside the town. Newington's Planning Director describes the town as being largely built out with limited areas for new development. The 1995 *Newington Plan of Development* projects a modest increase in population over the next ten years, from 29,208 to

approximately 30,000. The most pressing transportation concerns within the study area are related to Route 175 (Cedar Street) and its intersection with major north-south arterials, such as Main Street, as well as the Route 9 Expressway. There are no formal neighborhood associations within Newington. Its development pattern is typified by residential subdivisions of 50-200 homes. However, the neighborhood areas of North Newington and Newington Center, identified by their land use characteristics, are described in detail in Technical Report #1.

West Hartford. West Hartford is an established suburban area, with a solid base of both retail and manufacturing employment. Nonetheless, only 25 percent of West Hartford's resident workers are employed within the town. The remaining 75 percent commute to other locations, with the greatest flow being toward Downtown Hartford. At the same time, West Hartford's employers attract an even larger number of incoming commuters from other towns and cities, predominantly the City of Hartford and the towns of Newington and Bloomfield.

West Hartford's 1996 *Draft Town Plan of Conservation and Development* does not identify neighborhood areas. The Town's Planning Director has identified two neighborhood associations within the study area; however, some additional areas can be identified based on the 1986 *Plan of Development* and general land use characteristics. Descriptions of Wolcott, Elmwood, Webster Hill/Duffy/Braeburn, and West Hartford Town Center are available in Technical Report #1.

Farmington. Employment within the Town of Farmington now exceeded 25,000, so that there are more jobs located within the town than there are residents. Service industries, such as health care and education, as well as the FIRE cluster, represent 78 percent of the town's employment, while manufacturing accounts for 22 percent. Currently, the town contains some 2.5 million square feet of commercial office space, with a 16 percent vacancy rate. Much of the town's office space inventory is located within the Hartford West study area. The primary industrial area is the Farmington Industrial Park located well to the west of the study area boundary. Farmington is one of the few towns in the Capitol Region which has experienced growth in its manufacturing employment during the 1980's and 1990's.

The Hartford West MIS study area within Farmington lies east of Route 10 (Main Street) and south of Old Mountain Road. The Town's 1995 *Plan of Conservation and*

Development maps out distinctive neighborhoods, including six which are entirely or partially within the study area boundaries. The study area encompasses the Oakland Gardens, Health Center, East Farms, Robbins, and Batterson Park neighborhoods, along with the southern portion of the Talcott neighborhood. Both Oakland Gardens and East Farms have formal neighborhood associations. The distinctive land use and socio-economic characteristics for the study area neighborhoods are summarized in Technical Report #1.

I.4 CORRIDOR TRANSPORTATION ISSUES

The issues and problems defined for the Hartford West corridor are interrelated. For example, problems with highway connectivity create peak hour congestion on arterial segments where the primary travel demands are not directly served. In other cases, problems may represent the symptom rather than the cause.

The regional issues are presented conceptually in [Figure 1.2](#). The regional issues and problem areas may be summarized as:

- Peak Hour Congestion on I-84 and Parallel Arterials;
- I-84 Highway Connectivity;
- Access from the Farmington Valley to the Hartford CBD;
- Transportation Needs for Improved Transit Service; and
- Opportunities for Alternative Modes.

In addition to these components of needs, there are other equally pressing matters of localized concern. As noted above, support for economic redevelopment initiatives in Hartford, or undesirable traffic volumes in neighborhoods abutting the Interstate or busy arterials are important issues for local decision makers.

Peak Hour Congestion on I-84 and Parallel Arterials

The I-84 Hartford West corridor has been determined by CRCOG to be the most congested within the Capitol Region with an ADT of 154,000. For the future year 2020, the total demand for I-84 could exceed 190,000 vehicles per day. As confirmed by CORFLO and FRESIM models, congested routes include I-84 and parallel arterials, such as Route 4, Farmington Avenue and Park Street. This congestion is projected to grow significantly to the year 2020. Peak hour average travel speed will drop and hours of delay will increase especially in the eastbound direction during both morning and evening periods.

Commutation to the Hartford CBD and reverse commutation to suburban locations constitute a large compo-

nent of morning and afternoon peak period travel. Growth projections for the region reinforce this trend as employment in Hartford's CBD will increase dramatically. The increasing volume of travel to other major activity centers including the UConn Health Center, Westfarms Mall and Downtown New Britain, can also be identified as the source of both corridor wide and localized congestion problems. Reverse commutation, coupled with regional travel, increases traffic volumes in what is normally thought of as the "off-peak" direction.

Travel Time Runs and Average Travel Speed. Travel speeds are a direct indicator of Level of Service (LOS) and congestion. Average travel speeds on Route 4 during the P.M. peak period are less than 35 mph, with travel speeds of less than 25 mph on some sections. These indicate areas of congestion and poor Levels of Service. Although overall eastbound and westbound travel speed on I-84 was recorded at 49.1 mph and 42.8 mph, respectively, on certain segments speeds were experienced as low as 25 mph. These segments were typically near the CBD in the peak direction of travel.

Accident Data Analysis. Interstate 84 and Route 9 display the lowest accident rates. This is generally reflective of a higher design standard and more access control. In contrast, Route 173 which carries lower volumes than Route 9 experienced more accidents per mile and therefore a higher accident rate. A detailed breakdown of accidents by route number and town is included in Technical Report #1.

Modeling of Current and Future Performance

A set of computer-based models was used to quantify the current and future performance of the roadway network within the Hartford West corridor. ConnDOT's statewide travel demand model was used to relate current and future population and employment to projected future travel demand. A network simulation model (CORFLO) was used to approximate the movement of vehicles along the highways for both current and future traffic conditions. The FRESIM simulation model allowed a more detailed analysis of Interstate 84.

Daily and peak period trip tables for 1995 and 2020 were developed from the travel demand model using the traffic analysis zone (TAZ) definition and highway network developed for CORFLO. Between 1995 and 2020, the overall increase in the vehicle trip ends during the A.M. peak hour will be approximately 33% and in the P.M. peak

hour increase in trip ends approximately 32%.

Both now and in the future, peak hour vehicle trips through the region (ie. with neither origin or destination in the corridor) are not only a portion of total traffic on I-84, but also show a dominant flow in the reverse direction. (Figure 1.3) In the A.M. peak hour more vehicles flow in the westbound direction, and in the P.M. the eastbound direction.

The traffic flows from close-in suburbs (Newington and West Hartford) toward Hartford are higher than from Farmington and New Britain. In a similar manner, greater traffic movement occurs between the cities south of the I-84 corridor (New Britain, Newington) to and from Hartford than between the cities north of the I-84 corridor (West Hartford and Farmington) to and from Hartford.

Based on the CORFLO and FRESIM model results, travelers on future corridor roads can expect the following:

- Decrease in travel speeds;
- Increase in vehicle density i.e., more vehicles per mile of highway;
- Decreased levels of service;
- Capacity constraints;
- Increased vehicle delays; and
- Increased fuel consumption.

Freeway Performance

Both now and in the future I-84 will carry the greatest portion of person trips in the Hartford West corridor. However, the capacity of the Interstate will inhibit its ability to perform successfully. FRESIM model results for 1995 and 2020 are illustrated in Figures 1.4 and 1.5.

I-84 Westbound. Even though this is considered the “off-peak” direction during the morning A.M. peak, I-84 westbound still carries high traffic volumes during this time. While currently no LOS is below “E,” the segments with a “C” are projected to become “D” and segments with a “D” are projected to become “E” by 2020. Travel speeds, which are currently between 50 and 52 miles per hour, will be reduced to between 47 and 51 miles per hour. Continued growth in employment at the west end of the corridor (Farmington) will exacerbate the poor performance of Exits 39A, 39, 38, and 37 and their related roadway segments.

Performance in the peak direction during the evening P.M. peak is worse than the A.M. peak with a LOS in the “E” range. A comparison of 1995 and 2020 reveals degradation in service. The freeway segments associated with

Exits 49 through 46 will routinely fail (i.e., LOS “F”) and average speeds will reduce to below 25 miles per hour as compared to 50 miles per hour during the A.M. peak.

I-84 Eastbound. Currently, in the morning A.M. peak, eastbound I-84 reaches LOS “F” on the most easterly segment of the freeway between Exits 46 through 49. Average speeds on these segments will drop below thirty miles per hour as peak volumes approach 6,500. The situation by 2020 will become much worse as the segments from Exit 39A through 49 will experience a LOS “F” with average speeds dropping below twenty miles per hour and volumes exceeding 7,400.

Interestingly, the evening P.M. peak which is generally thought of as the off-peak period in the eastbound direction, is projected to experience a generally failing Level of Service from Exit 39A through the east end of the corridor. Speeds will drop to twenty miles per hour by 2020.

Arterial Roadways. The percentage of roadway mileage operating at a volume/capacity ratio greater than 0.75 will increase substantially in the year 2020. Figure 1.6 illustrates the existing 1995 and anticipated 2020 P.M. peak hour volume to capacity ratios for key arterial roadways in the network.

On arterials, intersections are often the locations where congestion most frequently occurs. Several of the intersections, which are currently operating at or near capacity, will fail under future anticipated traffic volumes. Figure 1.7 illustrates the existing 1995 and 2020 P.M. peak hour LOS results for intersections. Many unsignalized intersections will require signalization in the future.

Hourly Variation in Peak Period Traffic. The analysis above has demonstrated that by the year 2020, a number of highway segments in the corridor will experience failing or unsatisfactory levels of service. The peak periods will become more congested, and an amount of peak period travel will occur immediately before and after the peak period. This tendency is referred to as peak spreading.

The analysis has shown that in the future no-build condition demand for travel will clearly outstrip the ability, or capacity, of the highway corridors to handle the traffic during the peak periods. Motorists will adopt one of four strategies to avoid the congestion. They could:

- Take an alternative less traveled route - Interstate to arterial or arterial to local road;
- Change their hours of travel - begin earlier or arrive later;

- Travel by an alternative mode - rideshare or public transit; or,
- Not make the trip at all - change job location or work at home.

In the case of the last two alternatives, there would be a “net” reduction in peak period automobile vehicle trips. Generally, an alternative mode will be attractive only if it reduces travel time, or reduces costs. In the final case, the reduction in the number of trips represents a reduction in “mobility” unless an alternative such as telecommuting may be substituted. Technical Report #1 offers a further look at the spreading of peak periods.

I-84 Highway Connectivity

Some congestion may be caused by indirectness of travel introduced on the network by poor connectivity. Poor connectivity may be one of two types - lack of connectivity or poorly designed or substandard connection. An example of lack of connectivity would be when interchange serve only one direction of travel (e.g., Flatbush Avenue - Exit 45, or Sigourney Avenue - Exit 47). Poorly designed connections would include left-hand entrance or exit ramps (e.g., Route 4 - Exit 39). In many cases this may induce lane changing or mixing of higher speed and slower speed traffic that disrupts flow and creates hazards resulting in severe accidents.

While the expressway network in the study area is considered “complete” according to current plans, many connections between arterials and between arterials and expressways are either absent, or are physically or functionally obsolete. In several cases improved ramp connections could provide more direct access to key areas of potential economic development. The construction of identified “missing links” could reduce indirect vehicle travel through residential neighborhoods, reroute truck traffic, and better balance the locations of transportation capacity and the locations of transportation demand. Several of the existing I-84 interchanges could be modified to reduce or eliminate substandard exiting or merging areas. They include:

- **Route 4 to Route 9** - Eastbound access from Route 4 to Route 9 is only possible through a circuitous path along two lane roads in Farmington;
- **U.S. 6 & Route 4** - In CRCOG’s Route 4 Corridor Study, it was suggested that better connections between U.S. 6, Route 4 and I-84 could relieve the congestion through Farmington Town Center by providing alterna-

tive travel paths;

- **Flatbush Avenue Ramps, Connection to Charter Oak and Parkville Redevelopment** - As plans progress for the Charter Oak Redevelopment and renewed development in Parkville, the desire for more direct I-84 eastbound access to Flatbush Avenue as well as the return movement will be more important to accommodate commercial traffic and employee and customer access;

- **Sigourney Street Ramps** - Similar to the Flatbush interchange, the partial interchange at Sigourney causes motorists from the west headed to Aetna, The Hartford, and other insurance companies to use arterial streets resulting in unnecessary congestion in the morning and evening peak periods;

- **Left Hand Ramp Connections** - Interstate entrance ramps and left exits in Hartford and West Hartford create potentially hazardous situations and may contribute to congestion on selected arterials. Lefthand ramps at the interchanges along Interstate 84 create a special problem. Current design standards for new construction of Interstate-type roads require that all exits and entrances be made from the right side of the traveled way. This standard is intended to be consistent with driver expectation and to assure that slower moving vehicles seeking to exit or enter the freeway will do so from the slower moving lanes. Right hand ramps also limit the number of lane changes that must be made prior to or following a ramp.

Access from the Farmington Valley to the Hartford CBD

Travel models project the continued future growth of population in suburban locations and the growth of employment throughout the region. Both population and employment growth have occurred in the Farmington Valley communities of Farmington, Simsbury, Avon and Canton causing increasing numbers of commuters to utilize the I-84 corridor, as well as parallel arterial routes, such as Route 44 and Route 4 (Farmington Avenue).

Not only is the capacity of the existing roadway network inadequate to handle current and projected traffic, but roadway expansion is severely constrained by the adjacent land uses and environmentally sensitive areas. The steep topography of the Talcott Mountain ridge and the barrier of the Farmington River and associated wetlands pose a

further limitation on available right-of-way.

Arterials pass through residential areas or are lined with business establishments. As congestion grows on the limited number of arterial routes, traffic often seeks alternative less congested routes through residential or other neighborhood areas. This trend adversely impacts the safety of the local roadway network for all users, including bicyclists and pedestrians. It also diminishes the quality of life of these communities.

Transportation Needs for Improved Transit Service

The review of existing transit conditions in the study area found that a network of fixed route bus services of 21 routes using a daily peak requirement of 69 buses serves a daily ridership of approximately 21,000 person trips in the corridor. Most service in the corridor is offered in the towns of Hartford, West Hartford and New Britain. Newington is served by only three routes. Farmington is served by only two routes.

Approximately 10% of the state's population and 15% of its employment, is located in the study area. Transit usage for commuting in the corridor communities far exceeds the statewide average, with approximately 7% of all persons working at area firms and 8% of all study area residents commuting by bus.

Transit mode share in the study area is higher than in the balance of the state. The higher mode share may be attributed to the socio demographics of the Hartford workforce. The data suggests that the quality of the transit services offered to more affluent commuters, who can chose to drive to work, is not sufficient to attract many riders. The data also suggests that New Britain has a more self-contained labor market where local residents walk to local jobs. West Hartford's relatively high transit mode share appears to reflect the high level of transit service offered in that community. Improvements in coverage, frequency, velocity and hours of service elsewhere in the study area could yield similar results.

Transit Providers. The area is served by CTTransit; New Britain Transportation, and DATTCO. In addition there is a network of 15 park and ride lots with 1,800 spaces served by six express routes carrying 937 daily passengers on I-84 to/from Hartford.

Within Hartford, a local downtown Hartford circulator bus network is operated by Greater Hartford Transit District with a fleet of ten buses and 3,000 daily passengers. The Greater Hartford Ridesharing Corporation pro-

vides ridesharing brokerage services for the region. It is reported that 18,600 commuters living the study area communities carpool or vanpool to work; The rate of commuting shared ride modes is approximately twice that for fixed route transit services.

Three major intercity bus companies provide 52 daily bus trips between Hartford and points south and west of the city. An intercity rail passenger carrier, Amtrak, offers 14 daily trips to/from New Haven, New York and Washington D.C.

Connecticut Transit. Connecticut Transit (CTTransit) is the principal public transit bus operator in the State of Connecticut. CTTransit is owned by the State and has operating divisions in Hartford, New Haven and Stamford. The CTTransit - Hartford Division operates local fixed route service in both local and commuter express service. According to the FTA's national transit database for 1994, CTTransit operates with a peak vehicle requirement of 185 buses, 477 employees and an annual budget of approximately \$29.7 million. Its annual ridership in 1994 was 17.9 million with fare revenues of \$11.3 million, with a fare recovery ratio of approximately 38%. According to CTTransit, ridership on the Hartford division has dropped 12.5% in the last four years but appeared to be rebounding in 1997. Systemwide ridership is approximately 50,000 passenger trips per day.

CTTransit operates 30 local routes and 15 express routes in the Greater Hartford Area. Eight (8) of the local routes, one (1) crosstown route and four (4) of the express routes service Hartford's West corridor neighborhoods. Together the West Corridor routes carry 40% of the entire system's daily ridership. Within the study corridor, CTTransit operates twelve routes, serving approximately 19,000 daily passengers using a peak requirement of approximately 52 buses.

New Britain Transportation. New Britain Transportation provides local service on five routes in the City of New Britain and two express routes to downtown Hartford under contract with Connecticut DOT. According to the FTA's national transit database for 1994, the New Britain Transportation Company Service operates with ten (10) buses, 17.4 employees and an annual budget of approximately \$1 million. Its annual ridership in 1994 was 561,800 with fare revenues of \$328,200 for a fare recovery ratio of approximately 33%. Local routes providing mobility in the corridor, connections to Connecticut Transit service in Hartford, and express service to Hartford.

Greater Hartford Transit District. The Greater Hartford Transit District is responsible for the development and renewal of transportation centers and parking facilities and regulation of private transportation companies, such as taxis and motor coach services, for trips falling entirely within the district's boundaries. In addition to its planning and regulatory activities, GHTD is a local transportation provider that operates a downtown shuttle in the Hartford known as the "Scooter" and operates the Greater Hartford area paratransit service.

The "Scooter" shuttle is a cooperative effort of several downtown employers who formerly operated separate bus/van shuttles among their downtown work sites and various public and private parking lots. The Scooter fleet includes ten (10) motor coach buses. Daily Scooter ridership is estimated at 3,000 daily trips. Scooter service is free to employees of sponsoring companies and is available to the general public for a \$1.00 fare.

Paratransit service in the Greater Hartford area includes services as mandated by the Americans with Disabilities Act (ADA) as well as dial-a-ride taxi and van service available to a broader population of senior citizens. The ADA paratransit service will take an individual to and from any locations that fall within 3/4 mile from any fixed route bus service for double the regular fare. Within the Connecticut Transit service area, that results in a \$2 - \$5 one-way fare for the ADA paratransit service. GHTD runs 16,000-17,000 paratransit trips per month, of which approximately 25% are ADA service. GHTD uses nearly 50 vehicles to provide its paratransit service. The dial-a-ride service is a free service for those aged 65+, or who have a disability, and reside in the communities of Hartford, East Hartford, Manchester or Wethersfield.

Amtrak and Other Rail Services. The only passenger rail service operating in the corridor is Amtrak's Springfield-Hartford-New Haven main line. The line owned and operated by the National Rail Passenger Corporation (trade name: Amtrak) offers direct service to New York, Philadelphia, Baltimore, Washington D.C., Richmond, Boston, and Vermont. The service features seven daily southbound passenger trains and six daily northbound trains. Amtrak also operates a daily southbound express mail train that does not carry passengers.

The Amtrak line through Hartford is largely single track with passing sidings, but is double tracked with a long (2 mile) high speed siding in Newington and West Hartford and an equally long industrial track between West

Hartford and Hartford. The rail right of way was originally designed to accommodate four (4) main tracks south to Newington Junction immediately west of Willard Avenue (Route 173). At Newington Junction the right of way splits. A two track right of way crosses Piper Brook headed for New Haven while another two track right of way breaks east towards New Britain.

Today, rail service on the line to New Britain has been abandoned and the line to New Haven is largely single track with only modest levels of local and through freight activity. The remaining main track is in the position that would have been the southbound track to New Haven (the second main track from the eastern edge of the right of way). Between Newington Junction and Hartford the right of way west of the two remaining tracks is largely vacant (but intact) occupied by a single industrial turnout in West Hartford to a Heublein facility. The now unused western most track on the right of way is the remains of former New Britain Secondary Track which provided a dedicated line between Hartford Yard and industrial activity in downtown New Britain. Some of this abandoned track remains in right of way in Newington and West Hartford but is in decrepit condition and completely unusable.

New Britain Secondary Track. In Newington, the Amtrak line is joined by a branch line leading to downtown New Britain. This line was acquired by the State of Connecticut in the early 1990's for potential use as a passenger rail right of way. Conrail formally retired the 3.5 mile line segment from freight service in 1992. It is not in operable condition at this time. The New Britain Secondary connects with the Amtrak New Haven-Springfield main line at Newington Junction immediately south of Willard Avenue (Route 173) in Newington. According to reports by the Connecticut DOT, this line segment would need to be completely rebuilt before any attractive rail passenger service could be operated on this line. The field inspection of the line in February 1997 supports this finding.

Over most its length, the New Britain Secondary has a single track remaining from the 1980's. The right of way is wide enough at almost every point in New Britain to support four parallel tracks. The useable right of way has been narrowed to a one or two track capacity where highway building activities have encroached on the former rail right of way.

Inspection of the right of way found the road bed is

largely in good shape with minor drainage problems. No serious engineering obstacles to use of the line for transportation purposes were noted. With respect to environmental concerns, the rail embankment in some areas passes through wetlands or adjacent to some single and multi-family homes.

Opportunities for Alternative Modes

Members of the Policy and Technical Advisory Committees expressed strong interest in providing Hartford West commuters with alternatives to conventional highway transportation. Because of the importance placed on livable communities and quality of life, accommodation of safe bicycle and pedestrian movement will be an important enhancement to the recommended transportation improvements. Strategies developed must not merely protect pedestrians, but must also serve to improve and enhance their ability to move freely throughout the study corridor and the larger region. Health consciousness and environmental awareness have increased the use of the bicycle as a mode of transportation and for recreational purposes. Bicycle accommodation or planning for separated bike only facilities is important to the community's residents.

Greater Hartford Ridesharing Corporation.

The Greater Hartford Ridesharing Corporation (GHRC), known as the "Rideshare Company," is the Capitol Region's Transportation Management Organization (TMO). GHRC is a private, non-profit organization acting as a transportation facilitator and service provider for commuters and employers in both the public and private sectors. In 1990, an estimated 18,600 commuters residing in the study area communities regularly used either a carpool or vanpool as their principal means of traveling to and from work. This comprises approximately 11% of work trips made by study area residents. Approximately 13% of the 240,000 persons working in the study area communities use a carpool or vanpool to get to and from work. GHRC estimates 16 "Easy Street" vanpools currently originate within the study area.

Park and Ride Facilities. The Connecticut Department of Transportation maintains a statewide system of Park and Ride lots for commuters who want to avoid traffic congestion and save on commuting costs. These commuters can leave their cars at any of the 227 lots across the state while they use carpools, vanpools, buses or trains for their trips to work. Within the

Hartford West commuter shed, ConnDOT maintains 15 lots with a capacity of 1,839 spaces. Nine of the lots are served by express buses to downtown Hartford.

Interregional Transit Service. Analysis of the existing transit service provided by CTTransit and others in the corridor reveals a focused and efficient service. In the light of projected increases in population, employment, and travel demand, the role of public transit - especially local and express bus - needs to be reassessed. The following are two market niches that could be served by transit.

- **Reverse Commutation to Suburban Employment Centers**

- A major portion of employment growth in the Greater Hartford region is increasingly focused on its outlying suburban towns, while the traditional regional core, Downtown Hartford, has experienced loss of 12,520 jobs (10 percent of its total employment) between 1993 and 1995. Newington, Simsbury and Granby all reported employment gains of over 500 jobs each. Farmington now has more workers commuting to its employment centers than it has outbound commuting residents. Regional models project continued growth in the vicinity of the UConn Health Center and Westfarms Mall.

These trends have caused an increase in reverse commuting (e.g. center city to suburb) and it also presents an obstacle to those without access to a private vehicle. New transit initiatives, in the form of work-oriented shuttle services, vanpools, and other alternatives, may be required to adequately and efficiently service this demand.

- **Farmington/West Hartford - New Britain Transit Connection**

- The conventional radial orientation of many public transit routes means that some types of trips for education, shopping, and personal business are poorly served. Within the study corridor, shopping areas in Farmington for example are inaccessible by public transit from New Britain. In this case the same is true of employment destinations. Looking at the travel demands that are not core oriented will provide the potential of increasing transit utility in the corridor.

Data from regional transit providers also reveals that not only are the low income, transit dependent served, but also travel markets composed of more affluent residents. Especially in conjunction with other transporta-

tion demand management strategies such as congestion or parking pricing, public transit may serve a viable alternative by increasing mode choice.

Pedestrian Needs

National travel surveys indicate that most pedestrian trips do not exceed two miles. However, a great deal of travel within the I-84 study area is actually made over much shorter distances, such as shopping trips, trips to school or to visit friends. For these trips, walking is an enjoyable and healthy alternative to using the car.

In addition, all travel whether by auto or by transit with the possible exception of trips to drive-through fast food and banking involves a segment of pedestrian travel at the beginning and end of the trip. The “intermodal” segment (ingress) serves as access to the automobile or transit vehicle and the access (egress) to the final destination walking out to the street, driveway or parking lot.

For auto trips within an urban or more intensively developed suburban setting, for example Hartford CBD, West Hartford Town Center and the University of Connecticut Health Center campus, this travel component becomes more significant, since parking facilities are typically larger and are located at greater distance from the actual activity center. It is in these locations that pedestrian facilities — sidewalks, signals, crosswalks, signage, benches, planters and other amenities — are often provided. With appropriate security, a walkable environment can be a distinguishing feature of urban or town centers. However, in an urban setting, concern for personal security can act as a deterrent to pedestrian travel.

Pedestrian-oriented shopping districts attract customers from throughout the region. This is the urban design objective for areas such as Farmington Avenue in Hartford and West Hartford, West Hartford Town Center, Downtown New Britain, and Farmington Center (outside the study area). Newington Center does not have the commercial diversity to attract large numbers of visitors from outside the town, but it does provide a destination for pedestrian trips from adjacent residential areas. Other commercial corridors within the study area are likely to retain their auto orientation due to existing land use and density characteristics.

The City of Hartford provides sidewalks and street lighting on almost all of its streets, and in New Britain about three-quarters of the street network has these amenities provided. These features are characteristic of the pedestrian-oriented pattern of urban design that pre-

vailed, from 1850 to 1950. Today, approximately ten percent of Hartford residents, and six percent of New Britain residents walk to work. These are high percentages for cities of their respective sizes.

In older suburban area, sidewalks are provided on West Hartford’s arterials and collectors, as well as the majority of its local residential streets. The Town’s Planning Director notes the high proportion of senior citizens as a factor encouraging pedestrian travel, especially for exercise/recreation. There are also off-street walking paths along Trout Brook in the block between the Boulevard and Farmington Avenue and for one block along the Park River.

In Newington, sidewalks occur primarily along major arterials. While most of Route 175 has sidewalks on both sides of the street, there are some limited segments where the roadway right-of-way does not allow adequate room to provide sidewalks.

For Farmington, sidewalks are provided along some segments of the arterials, and along a number of collectors. Many local streets do not have sidewalks and pedestrian travel tends to be focused on those limited areas of the town that have a more urban development pattern, such as Farmington Center and Unionville. Recreational walking occurs throughout the community, but there is no particular accommodation of this activity except within town parks.

Bicyclist Needs

For transportation-oriented bicycle travel (as opposed to recreational), the primary routes are along the study area’s major and minor arterials, such as Farmington Avenue, the Boulevard, Park Street/Park Road, Route 175, New Park Avenue, and New Britain Avenue. No alternative off-road paths have been constructed within the study area, and existing traffic volumes along many routes make them unappealing and hazardous for bicycle use.

The City of Hartford’s *Plan of Development* identifies the potential for several on-street bicycle routes within the study area including in the vicinity of Colt Park, in the South Green neighborhood, in the area adjacent to Pope Park, and in the West End.

The conceptual alignments for two off-street paths are also identified. One of these would utilize the ridge line extending through Rocky Ridge Park south to Thomas Hyland Memorial Park. The other would be developed along the Park River west of Pope Park. Ultimately, the City intends to link this system with the Connecticut

Riverwalk being developed by the Riverfront Recapture program. According to the City's Chief Staff Planner, a proposal has also been made to construct a velodrome (a banked bicycle track for Olympic-type competitive racing) within the Charter Oak area.

Bicycle accommodation outside the City of Hartford is equally limited. Several towns have bicycle or mixed use paths in their parks, including MDC properties in West Hartford, but no designated, signed or marked bike routes have been created. Proposals for more extensive bicycle facilities are typically in the initial planning stages for all the study area towns.

Goods Movement

Interstate 84 provides a key link between the New York Metropolitan Area and Boston. Through its connection to Interstate 80 in northeastern Pennsylvania, it also offers long distance commercial traffic an alternative to congestion in the New York area by allowing them to access New England destinations via the Newburg-Beacon Bridge located some 50 miles north of New York City.

Given these characteristics, it is reasonable to assume that most truck traffic on I-84 is not local to Connecticut (i.e. it neither originates nor terminates within the state). According to the most recent ConnDOT classification counts for I-84, there were approximately 6,500 heavy vehicles counted at the station closest to the New York State line (Danbury) and 6,100 heavy vehicles counted at the station closest to the Massachusetts line (Tolland). Approximately 65 percent of these vehicles were tractor-trailers (5+ axle vehicles). In the Hartford area, the volume of truck traffic on I-84 dips to approximately 5,000 as traffic destined for Hartford area businesses exits for local routes to make pick-ups and deliveries.

Major generators of truck activity within the Hartford West study area include the University of Connecticut Health Center, Westfarms Mall, Colt Industries (West Hartford), Chandler Evans (West Hartford), Sears Distribution Center (Fenn Road - Newington), and Stanley Works (New Britain).

The reuse of several other industrial properties, including the Torrington and Loctite properties in Newington, and the Veeder-Root building in Hartford, can be anticipated to add a small number of additional trucks to the existing baseline volumes. Also, the development of Charter Oak Terrace as a light industrial complex would contribute some additional truck volume.

Outside the Hartford West study area, numerous manufacturing and distribution operations contribute a portion

of local truck traffic to I-84 and parallel arterials. These include Farmington Industrial Park, U.S. Postal Service Mail Processing Center (Hartford), UPS Distribution Center (Hartford), Hartford Regional Market (Hartford), Pratt and Whitney Aircraft (East Hartford), J.C. Penney Distribution Center (Manchester), and Buckland Hills Mall (Manchester).